Device type 01 inactive for new design as of 18 April 1979. Use M38510/31602B.

REVISIONS			
LTR	DESCRIPTION	DATE	APPROVED
F	Convert to military drawing format. Delete vendor CAGE number 27014. Table I, change t_{PHL1} (C_L = 50 pF for subgroup 9) from 23 ns to 24 ns (subgroups 10 and 11) from 31 ns to 33 ns. Change t_{PLH2} to t_{PLH1} and t_{PHL3} to t_{PHL2}. Add LCC, outline letter 2 to case outlines (make editorial changes pertaining to this). Change CAGE code to 67268.	9 Oct 1987	RPEvans

CURRENT CAGE CODE 67268

REV																											
PAGE																											
REV STATUS OF PAGES	REV	F	F	F	F	F	F	F	F	F																	
	PAGES	1	2	3	4	5	6	7	8	9																	

Defense Electronics Supply Center
Dayton, Ohio

Original date of drawing:
23 March 1976

AMSC N/A

PREPARED BY: Donna Grosel
CHECKED BY: DA Di Cenzo
APPROVED BY: Robert P. Evans

MILITARY DRAWING

This drawing is available for use by all Departments and Agencies of the Department of Defense

TITLE: MICROCIRCUITS, DIGITAL, BIPOLAR, LOW-POWER SCHOTTKY TTL, LATCH, MONOLITHIC SILICON

SIZE	CODE IDENT. NO.	DWG NO.
A	14933	76018

REV	PAGE
F	1 OF 9

5962-E577

DISTRIBUTION STATEMENT A. Approved for public release; distribution is unlimited.

DESC FORM 193
MAY 86

1. SCOPE

1.1 Scope. This drawing describes device requirements for class B microcircuits in accordance with 1.2.1 of MIL-STD-883, "Provisions for the use of MIL-STD-883 in conjunction with compliant non-JAN devices".

1.2 Part number. The complete part number shall be as shown in the following example:

76018	01	E	X
Drawing number	Device type (1.2.1)	Case outline (1.2.2)	Lead finish per MIL-M-38510

1.2.1 Device type. The device type shall identify the circuit function as follows:

Device type	Generic number	Circuit
01	54LS279	Quadruple $\overline{S}$-$\overline{R}$ latches

1.2.2 Case outlines. The case outlines shall be as designated in appendix C of MIL-M-38510, and as follows:

Outline letter	Case outline
E	D-2 (16-lead, 1/4" x 7/8"), dual-in-line package
F	F-5 (16-lead, 1/4" x 3/8"), flat package
2	C-2 (20-terminal, .350" x .350"), square chip carrier package

1.3 Absolute maximum ratings.

Supply voltage range	-0.5 V dc to 7.0 V dc
Input voltage range	-1.5 V dc at -18 mA to +5.5 V dc
Maximum power dissipation (P_D) per device 1/	38 mW
Storage temperature	-65°C to +150°C
Lead temperature (soldering, 10 seconds)	+300°C
Junction temperature (T_J)	+175°C
Thermal resistance, junction-to-case (θ_{JC}): Cases E, F, and 2	(See MIL-M-38510, appendix C)

1.4 Recommended operating conditions.

Supply voltage (V_{CC})	4.5 V dc to 5.5 V dc
Minimum high level input voltage (V_{IH})	2.0 V dc
Maximum low level input voltage (V_{IL})	0.7 V dc
Case operating temperature range (T_C)	-55°C to +125°C

1/ Must withstand the added P_D due to short-circuit test (e.g., I_{OS}).

2. APPLICABLE DOCUMENTS

2.1 Government specification and standard. Unless otherwise specified, the following specification and standard, of the issue listed in that issue of the Department of Defense Index of Specifications and Standards specified in the solicitation, form a part of this drawing to the extent specified herein.

SPECIFICATION

MILITARY

MIL-M-38510 - Microcircuits, General Specification for.

STANDARD

MILITARY

MIL-STD-883 - Test Methods and Procedures for Microelectronics.

(Copies of the specification and standard required by manufacturers in connection with specific acquisition functions should be obtained from the contracting activity or as directed by the contracting activity.)

2.2 Order of precedence. In the event of a conflict between the text of this drawing and the references cited herein, the text of this drawing shall take precedence.

3. REQUIREMENTS

3.1 Item requirements. The individual item requirements shall be in accordance with 1.2.1 of MIL-STD-883, "Provisions for the use of MIL-STD-883 in conjunction with compliant non-JAN devices" and as specified herein.

3.2 Design, construction, and physical dimensions. The design, construction, and physical dimensions shall be as specified in MIL-M-38510 and herein.

3.2.1 Terminal connections and logic diagram. The terminal connections and logic diagram shall be as specified on figure 1.

3.2.2 Truth table. The truth table shall be as specified on figure 2.

3.2.3 Case outlines. The case outlines shall be in accordance with 1.2.2 herein.

3.3 Electrical performance characteristics. Unless otherwise specified, the electrical performance characteristics are as specified in table I and apply over the full recommended case operating temperature range.

3.4 Marking. Marking shall be in accordance with MIL-STD-883 (see 3.1 herein). The part shall be marked with the part number listed in 1.2 herein. In addition, the manufacturer's part number may also be marked as listed in 6.4 herein.

3.5 Certificate of compliance. A certificate of compliance shall be required from a manufacturer in order to be listed as an approved source of supply in 6.4. The certificate of compliance submitted to DESC-ECS prior to listing as an approved source of supply shall state that the manufacturer's product meets the requirements of MIL-STD-883 (see 3.1 herein) and the requirements herein.

TABLE I. Electrical performance characteristics.

Test	Symbol	Conditions $-55°C \le T_C \le +125°C$ unless otherwise specified		Group A subgroups	Limits Min	Limits Max	Unit
High level output voltage	V_{OH}	V_{CC} = 4.5 V, V_{IH} = 2.0 V, I_{OH} = -0.4 mA, V_{IL} = 0.7 V		1, 2, 3	2.5		V
Low level output voltage	V_{OL}	V_{CC} = 4.5 V, V_{IH} = 2.0 V, I_{OL} = 4.0 mA, V_{IL} = 0.7 V		1, 2, 3		0.4	V
Input clamp voltage	V_{IC}	V_{CC} = 4.5 V, I_{IN} = -18 mA		1		-1.5	V
High level input current	I_{IH1}	V_{CC} = 5.5 V, V_{IH} = 2.7 V		1, 2, 3		20	µA
	I_{IH2}	V_{CC} = 5.5 V, V_{IH} = 5.5 V		1, 2, 3		100	µA
Low level input current	I_{IL}	V_{CC} = 5.5 V, V_{IL} = 0.4 V		1, 2, 3		-0.4	mA
Short-circuit output current	I_{OS}	V_{CC} = 5.5 V, V_{OUT} = 0.0 V 1/		1, 2, 3	-6.0	-130	mA
Supply current	I_{CC}	V_{CC} = 5.5 V, V_{IN} = 0.0 V 2/		1, 2, 3		7	mA
Functional tests		See 4.3.1c		7			
Propagation delay time, $\overline{S}$ to Q	t_{PHL1}	V_{CC} = 5.0 V, R_L = 2 kΩ ±1% 3/	C_L = 15 pF ±5%	9		21	ns
				10, 11		29	
			C_L = 50 pF ±5%	9		24	
				10, 11		33	
	t_{PLH1}		C_L = 15 pF ±5%	9		22	ns
				10, 11		31	
			C_L = 50 pF ±5%	9		27	
				10, 11		38	

See footnotes at end of table.

TABLE I. Electrical performance characteristics - Continued.

Test	Symbol	Conditions $-55°C \le T_C \le +125°C$ unless otherwise specified		Group A subgroups	Limits Min	Limits Max	Unit
Propagation delay time, $\overline{R}$ to Q	t_{PHL2}	V_{CC} = 5.0 V R_L = 2 kΩ ±1% 3/	C_L = 15 pF ±5%	9		27	ns
				10, 11		38	
			C_L = 50 pF ±5%	9		32	
				10, 11		45	

1/ Not more than one output should be shorted at a time, and the duration of the short-circuit condition should not exceed one second.
2/ I_{CC} shall be measured with all $\overline{R}$ inputs grounded, all $\overline{S}$ inputs at 4.5 V, and all outputs open.
3/ Propagation delay time testing may be performed using either C_L = 15 pF or C_L = 50 pF. However, the manufacturer must certify and guarantee that the microcircuits meet the switching test limits specified for a 50-pF load.

3.6 Certificate of conformance. A certificate of conformance as required in MIL-STD-883 (see 3.1 herein) shall be provided with each lot of microcircuits delivered to this drawing.

3.7 Notification of change. Notification of change to DESC-ECS shall be required in accordance with MIL-STD-883 (see 3.1 herein).

3.8 Verification and review. DESC, DESC's agent, and the acquiring activity retain the option to review the manufacturer's facility and applicable required documentation. Offshore documentation shall be made available onshore at the option of the reviewer.

4. QUALITY ASSURANCE PROVISIONS

4.1 Sampling and inspection. Sampling and inspection procedures shall be in accordance with section 4 of MIL-M-38510 to the extent specified in MIL-STD-883 (see 3.1 herein).

4.2 Screening. Screening shall be in accordance with method 5004 of MIL-STD-883, and shall be conducted on all devices prior to quality conformance inspection. The following additional criteria shall apply:

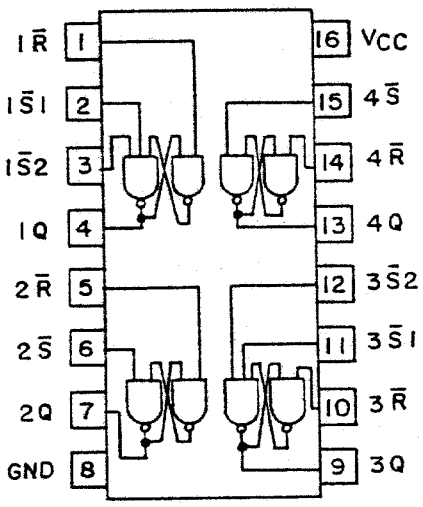
a. Burn-in test (method 1015 of MIL-STD-883).

(1) Test condition A, B, C, or D using the circuit submitted with the certificate of compliance (see 3.5 herein).

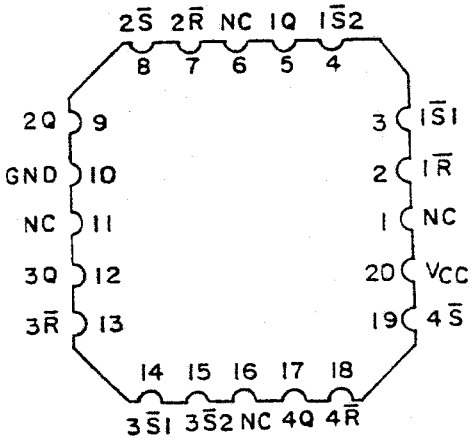
(2) T_A = +125°C, minimum.

b. Interim and final electrical test parameters shall be as specified in table II herein, except interim electrical parameter tests prior to burn-in are optional at the discretion of the manufacturer.

Cases E and F



Case 2



(Top view)

FIGURE 1. Terminal connections and logic diagram.

Inputs		Outputs
$\overline{S}$+	$\overline{R}$	Q
H	H	Q_0
L	H	H
H	L	L
L	L	H*

H = High level
L = Low level
Q_0 = The level of Q before the indicated input conditions were established.
* This output level is pseudo stable; that is, it may not persist when the $\overline{S}$ and $\overline{R}$ inputs return to their inactive (high) level.
+ For latches with double $\overline{S}$ inputs:
H = both $\overline{S}$ inputs high.
L = one or both $\overline{S}$ inputs low.

FIGURE 2. Truth table.

4.3 Quality conformance inspection. Quality conformance inspection shall be in accordance with method 5005 of MIL-STD-883 including groups A, B, C, and D inspections. The following additional criteria shall apply.

4.3.1 Group A inspection.

a. Tests shall be as specified in table II herein.

b. Subgroups 4, 5, 6, and 8 in table I, method 5005 of MIL-STD-883 shall be omitted.

c. Subgroup 7 tests shall verify the truth table.

4.3.2 Groups C and D inspections.

a. End-point electrical parameters shall be as specified in table II herein.

b. Steady-state life test (method 1005 of MIL-STD-883) conditions:

(1) Test condition A, B, C, or D using the circuit submitted with the certificate of compliance (see 3.5 herein).

(2) T_A = +125°C, minimum.

(3) Test duration: 1,000 hours, except as permitted by appendix B of MIL-M-38510 and method 1005 of MIL-STD-883.

TABLE II. Electrical test requirements.

MIL-STD-883 test requirements	Subgroups (per method 5005, table I)
Interim electrical parameters (method 5004)	---
Final electrical test parameters (method 5004)	1*, 2, 3, 9
Group A test requirements (method 5005)	1, 2, 3, 7, 9, 10, 11**
Groups C and D end-point electrical parameters (method 5005)	1, 2, 3

* PDA applies to subgroup 1.
** Subgroups 10 and 11, if not tested, shall be guaranteed to the specified limits in table I.

5. PACKAGING

5.1 Packaging requirements. The requirements for packaging shall be in accordance with MIL-M-38510.

6. NOTES

6.1 Intended use. Microcircuits conforming to this drawing are intended for use when military specifications do not exist and qualified military devices that will perform the required function are not available for OEM application. When a military specification exists and the product covered by this drawing has been qualified for listing on QPL-38510, the device specified herein will be inactivated and will not be used for new design. The QPL-38510 product shall be the preferred item for all applications.

6.2 Replaceability. Replaceability is determined as follows:

a. Microcircuits covered by this drawing will replace the same generic device covered by a contractor-prepared specification or drawing.

b. When a QPL source is established, the part numbered device specified in this drawing will be replaced by the microcircuit identified as part number M38510/31602B--.

6.3 Comments. Comments on this drawing should be directed to DESC-ECS, Dayton, Ohio 45444, or telephone 513-296-5375.

6.4 Approved sources of supply. Approved sources of supply are listed herein. Additional sources will be added as they become available. The vendors listed herein have agreed to this drawing and a certificate of compliance (see 3.5 herein) has been submitted to DESC-ECS.

Military drawing part number	Vendor CAGE number	Vendor similar part number 1/	Replacement military specification part number
7601801EX 2/	04713 01295	54LS279/BEAJC SNJ54LS279AJ	M38510/31602BEX
7601801FX 2/	04713 01295	54LS279/BFAJC SNJ54LS279AW	M38510/31602BFX
76018012X 2/	04713 01295	54LS279M/B2AJC SNJ54LS279AFK	M38510/31602B2X

1/ Caution. Do not use this number for item acquisition. Items acquired to this number may not satisfy the performance requirements of this drawing.
2/ Inactive for new design. Use QPL-38510 device.

Vendor CAGE number	Vendor name and address
04713	Motorola, Incorporated 7402 South Price Road Tempe, AZ 85283
01295	Texas Instruments, Incorporated P.O. Box 6448 Midland, TX 79701